LIBRARY
STATE PLANT BOARD

TECHNICAL SERIES, No. 25.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY.
L. O. HOWARD, Entomologist and Chief of Bureau.

PAPERS ON APHIDIDÆ.

CONTENTS AND INDEX.

ISSUED APRIL 26, 1915.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1915.

SB
823
A25

Digitized by the Internet Archive
in 2013

http://archive.org/details/papersonaphidida00phil_1

TECHNICAL SERIES, No. 25.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ENTOMOLOGY.
L. O. HOWARD, Entomologist and Chief of Bureau.

PAPERS ON APHIDIDÆ.

I. STUDIES ON A NEW SPECIES OF TOXOPTERA,

WITH AN ANALYTICAL KEY TO THE GENUS AND NOTES ON REARING METHODS.

By W. J. PHILLIPS AND J. J. DAVIS, *Entomological Assistant Cereal and Forage Insect Investigations.*

II. THE YELLOW CLOVER APHIS.

By J. J. DAVIS, *Entomological Assistant, Cereal and Forage Insect Investigations.*

ISSUED APRIL 26, 1915.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1915.

ILLUSTRATIONS.

PLATES.

Page.

PLATE I. Outdoor rearing shelters 12
II. Outdoor rearing shelters used in life-history studies on the yellow clover aphis 24

TEXT FIGURES.

FIG. 1. *Toxoptera muhlenbergiæ:* Winged viviparous female and antenna 2
2. *Toxoptera muhlenbergiæ:* Wingless viviparous female 3
3. *Toxoptera muhlenbergiæ:* Wingless male and antenna 4
4. *Toxoptera muhlenbergiæ:* Wingless oviparous female, antenna, hind tibia 5
5. *Toxoptera muhlenbergiæ:* Eggs 6
6. *Toxoptera muhlenbergiæ:* Eggs deposited in curled leaf sheath 13
7. Lamp-chimney molting cage used in rearing aphides 14
8. Lamp-chimney generation cage used in rearing aphides 15
9. Lamp-chimney stock cage used in rearing aphides 15
10. Map showing distribution of the yellow clover aphis (*Callipterus trifolii*) in the United States 19
11. The yellow clover aphis (*Callipterus trifolii*): Winged viviparous female and details 21
12. The yellow clover aphis: Wingless viviparous female and details 23
13. The yellow clover aphis: Winged male and antenna 24
14. The yellow clover aphis: Wingless oviparous female and details 25
15. Diagram showing periods and succession of generations in the yellow clover aphis, La Fayette, Ind., 1913 34

ERRATA.

Page 15, legend to figure 9, second line, for *aphieds* read *aphides*.
Page 19, line 18, for *sanfoin* read *sainfoin*.
Page 19, line 18, for *Unobrychis* read *Onobrychis*.

INDEX.

Page.

Alfalfa (see also *Medicago sativa*)—
not food plant of *Callipterus trifolii* in America 19
Aphidoletes sp., enemy of *Callipterus trifolii* 39
Aphis ononidis, probable synonym of *Callipterus trifolii* 17
Aphis, yellow clover. (See *Callipterus trifolii*.)
Barley, host plant of *Toxoptera graminum* 8
Bluegrass. (See *Poa pratensis*.)
Cages—
for life-history studies of *Callipterus trifolii* 26
for rearing *Toxoptera muhlenbergiæ* 16
Callipterus trifolii—
article 17–40
bibliography 40
cages used in life-history studies 26
description 20–26
distribution in America 18–19
distribution in Asia 19
egg, description 26
fecundity in relation to other species 38–39
female, winged viviparous, description 21–22
female, wingless oviparous, description 25
female, wingless viviparous, description 23
food plants 19
generation experiments 27–38
generic position 18
habits and life history 26–39
life history and habits 26–39
male, winged, description 23–24
molting 38
natural enemies 39
stem-mother, wingless, description 20
study, methods 26
synonymy 17–18
Camellia, host plant of *Toxoptera aurantii* 8
Carex sp., host plant of *Toxoptera caricis* 8
Ceylonia theaccola=*Toxoptera aurantii* 8
Chaitophorus maculatus—
bibliographic reference 40
=*Callipterus trifolii* 17
Chaitophorus ononidis, probable synonym of *Callipterus trifolii* 18
Citron, host plant of *Toxoptera aurantii* 8
Clematis, host plant of *Toxoptera clematidis* 8
Clover—
alsike, food plant of *Callipterus trifolii* 19
aphis, yellow. (See *Callipterus trifolii*.)
bur. (See *Medicago maculata*.)

Page.
Clover—Continued.
English, food plant of *Callipterus trifolii* 19
food plant of *Macrosiphum pisi* 38–39
Japan. (See *Lespedeza* spp.)
mammoth. (See *Trifolium medium perenne.*)
red. (See *Trifolium pratense.*)
sweet. (See *Melilotus* spp.)
white. (See *Trifolium repens.*)
Coccinella 9-notata, enemy of *Callipterus trifolii* 39
Davis, J. J., paper, "The Yellow Clover Aphis (*Callipterus trifolii* Monell)" .. 17–40
Davis, J. J., W. J. Phillips and, paper, "Studies on a New Species of Toxoptera, with an Analytical Key to the Genus and Notes on Rearing Methods" . . . 1–16
Empusa aphidis, fungous enemy of *Callipterus trifolii* 39
Fungous enemy of *Callipterus trifolii*. (See *Empusa aphidis.*)
Grasses, various, host plants of *Toxoptera graminum* 8
"Green bug." (See *Toxoptera graminum.*)
Hippodamia convergens, enemy of *Callipterus trifolii* 39
Ladybird, 9-spotted. (See *Coccinella 9-notata.*)
Lespedeza spp., not food plants of *Callipterus trifolii* 19
Lucern. (See *Medicago sativa.*)
Macrosiphum pisi on clover, fecundity in comparison with *Callipterus trifolii* .. 38–39
Medicago maculata, perhaps food plant of *Callipterus trifolii* 19
Medicago sativa (see also Alfalfa)—
food plant of *Callipterus trifolii* in India 17, 19
Megilla maculata, enemy of *Callipterus trifolii* 39
Melilotus spp., not food plants of *Callipterus trifolii* 19
Muhlenbergia sp., host plant of *Toxoptera muhlenbergiæ*, ... 1, 8, 9
Myzocallis ononidis, probable synonym of *Callipterus trifolii* 18
Myzocallis trifolii—
bibliographic reference 40
= *Callipterus trifolii* 18
Oats, host plant of *Toxoptera graminum* 8
Onobrychis sativa, not food plant of *Callipterus trifolii* 19
Orange, host plant of *Toxoptera aurantii* 8
Phillips, W. J., and Davis, J. J., paper, "Studies on a New Species of Toxoptera, with an Analytical Key to the Genus and Notes on Rearing Methods" .. 1–16
Poa pratensis, host plant of *Toxoptera muhlenbergiæ* 9
Rains in control of *Callipterus trifolii* 39
Rearing methods for *Toxoptera muhlenbergiæ* 15–16
Rhamnus alaternus—
host plant of *Toxoptera alaterna* 8
host plant of *Toxoptera variegata* 8
Rye, host plant of *Toxoptera graminum* 8
Sainfoin. (See *Onobrychis sativa.*)
Scirpus lacustris, host plant of *Toxoptera scirpi* 8
Scirpus specierum, host plant of *Toxoptera scirpi* 8
Therioaphis ononidis, probable synonym of *Callipterus trifolii* 18
Timothy, not food plant of *Callipterus trifolii* 19
Toxoptera alaterna, characters, host plant 8
Toxoptera, a new species, paper 1–16
Toxoptera aurantiæ = *Toxoptera aurantii* 8
Toxoptera aurantii, characters, host plants, synonyms 8
Toxoptera camelliæ = *Toxoptera aurantii* 8

Page.
Toxoptera caricis, characters, host plant 8
Toxoptera clematidis, characters, host plant 8
Toxoptera graminum—
characters, host plants 8
mistaken determination of *Toxoptera muhlenbergiæ* 1
Toxoptera, key to species of genus 8
Toxoptera muhlenbergiæ—
age when individuals begin reproducing 13
article 1–16
characters, host plant 8
continuous-generation experiments 9–13
distribution 9
egg, description 5
egg mortality 15
fecundity of oviparous females 14
fecundity of summer forms 13
feeding habits 9
host plants 9
length of life of viviparous forms 13
life history 9–16
molting 13
n. sp., description 1–8
oviposition place 14
rearing methods 15–16
sexes, life history 13–14
stem-mother, description of instars 6–8
winged viviparous female, description 1–3
wingless male, description 3–4
wingless oviparous female, description 4–5
wingless viviparous female, description 3
Toxoptera scirpi, characters, host plants 8
Toxoptera variegata, characters, host plant 8
Trifolium medium perenne, food plant of *Callipterus trifolii* 19
Trifolium pratense, food plant of *Callipterus trifolii* 19
Trifolium repens, food plant of *Callipterus trifolii* 19
Trifolium spp., not food plant of *Callipterus trifolii* in India 19
Vetch, spring, not food plant of *Callipterus trifolii* 19
Weather conditions in control of *Callipterus trifolii* 39
Wheat—
host plant of *Toxoptera graminum* 8
host plant of *Toxoptera muhlenbergiæ* 9

○

UNIVERSITY OF FLORIDA
3 1262 09229 6531